



Characterizing the 1999-2005 Canadian Prairie Drought: Drought Indices and their Associated Input Variables

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Fondation canadienne pour les sciences
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Research Objectives

- Quantify the extent and severity of the 1999-2005 Canadian Prairie drought at a variety of spatial and temporal scales.
- Use drought indices to examine the spatial, temporal patterns, and intensity of the droughts
 - Compare different methodologies to calculate the drought indices
 - Relate drought patterns to agricultural and hydrological impacts
 - Develop methods to document the dynamics of drought migrations



Drought Indices

- Standard Precipitation Index (SPI)
- Palmer Drought Severity Index (PDSI)
- Palmer Z-Index
- Climate Moisture Index (CMI)



Input Variables

- Gridded datasets of temperature and precipitation
 - Canada
 - Canadian Gridded Climate Data (CANGRID, Environment Canada) – 50km resolution
 - North America
 - Climate Research Unit (CRU TS 2.1, Mitchell and Jones, 2005) – 0.5 degree resolution
 - ANUSPLIN (McKenney et al. 2006) - 10km resolution

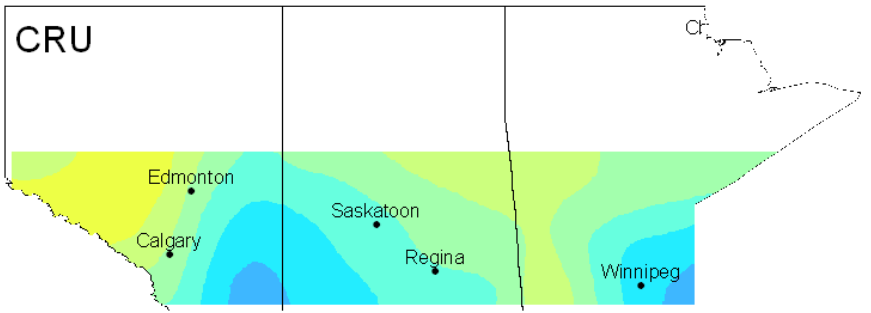
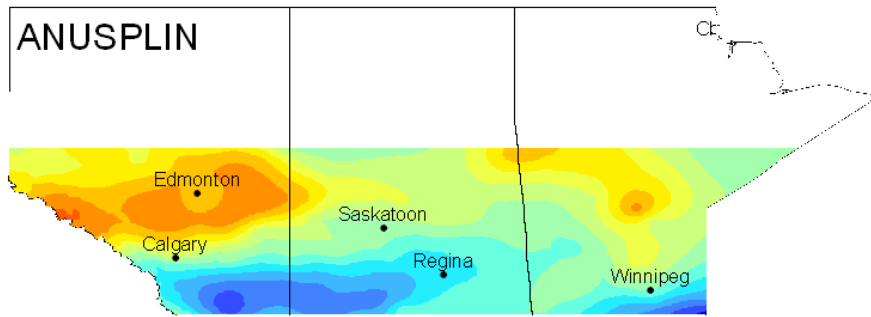
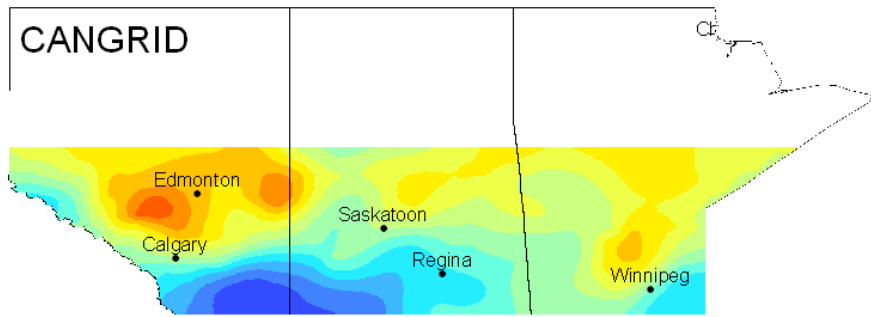


Saskatoon – Ranked 12-month SPI

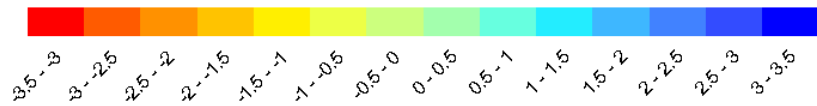
	STATION	CRU	CANGRID	ANUSPLIN
2001	1	39	2	1
1919	2	3	5	4
1924	3	4	3	3
1933	4	10	6	12
1929	5	2	1	5
2002	6	14	29	8
1998	7	8	25	18
1930	8	24	8	19
1952	9	11	19	17
1984	10	38	32	16

- 12-month SPI based on 2001 Agricultural year (September 2000-August 2001)

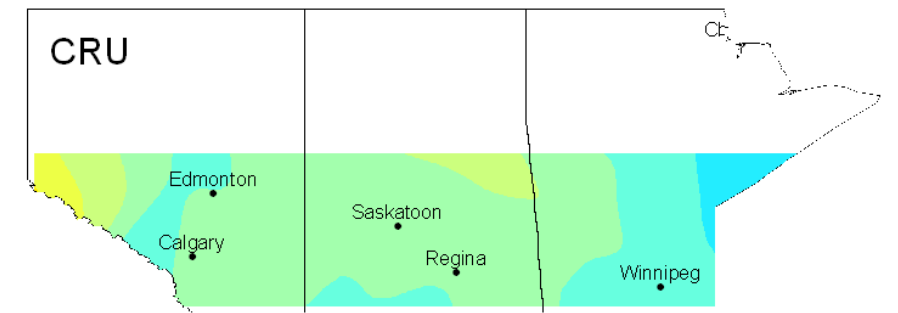
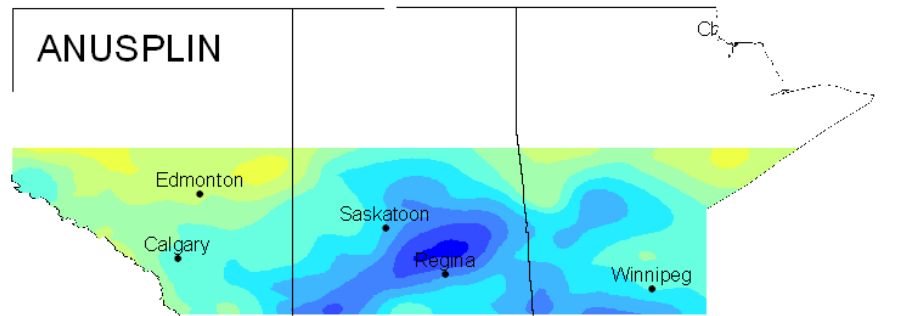
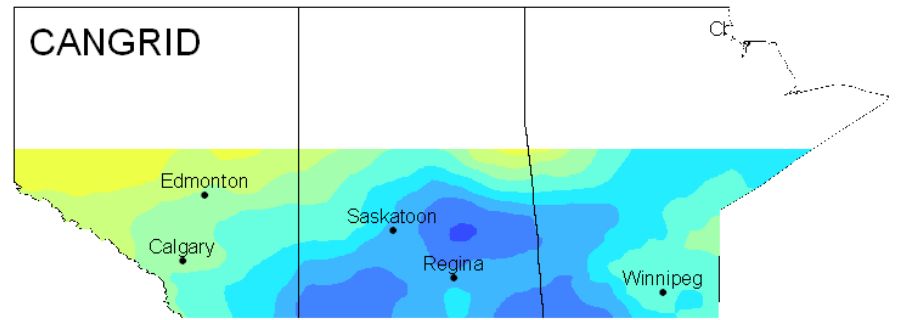
1-month SPI - June 2002



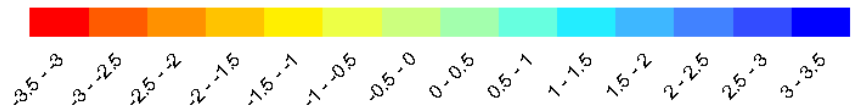
Standard Precipitation Index



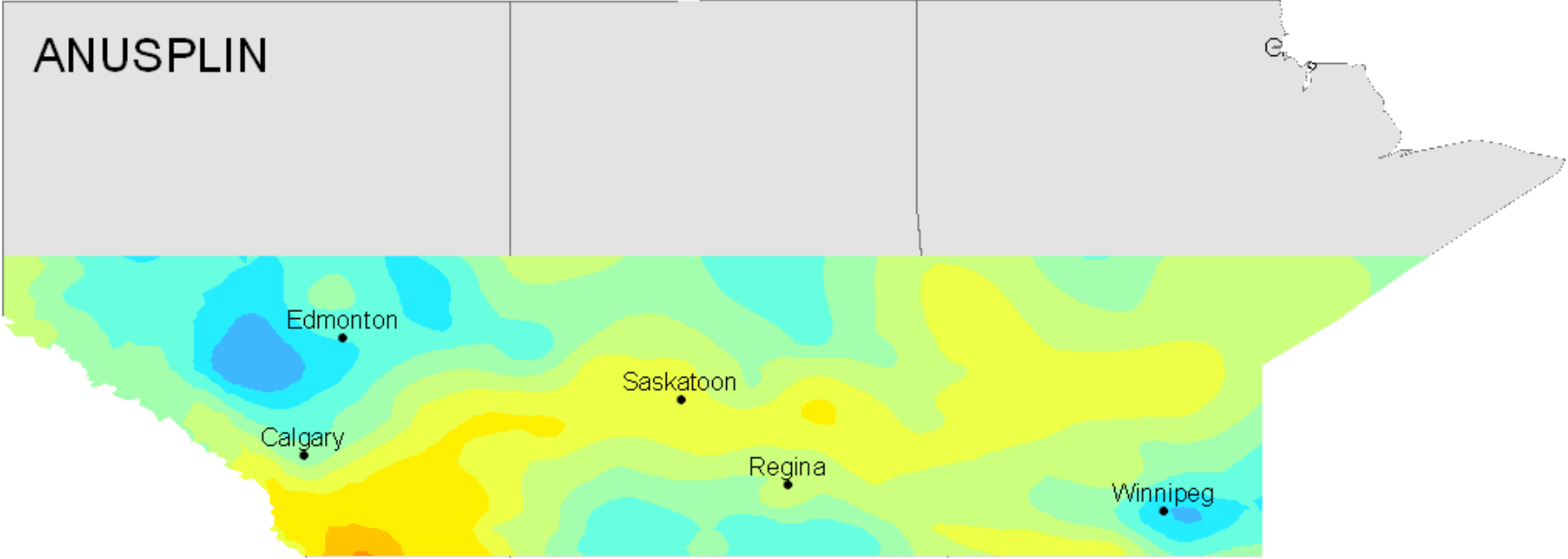
1-month SPI - August 2002



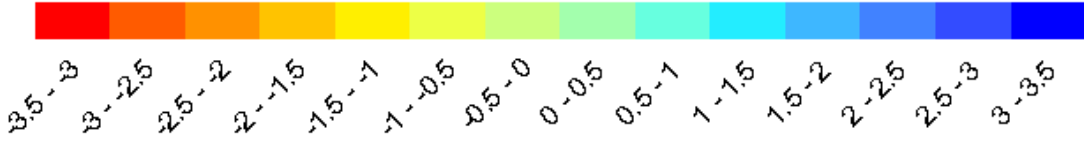
Standard Precipitation Index



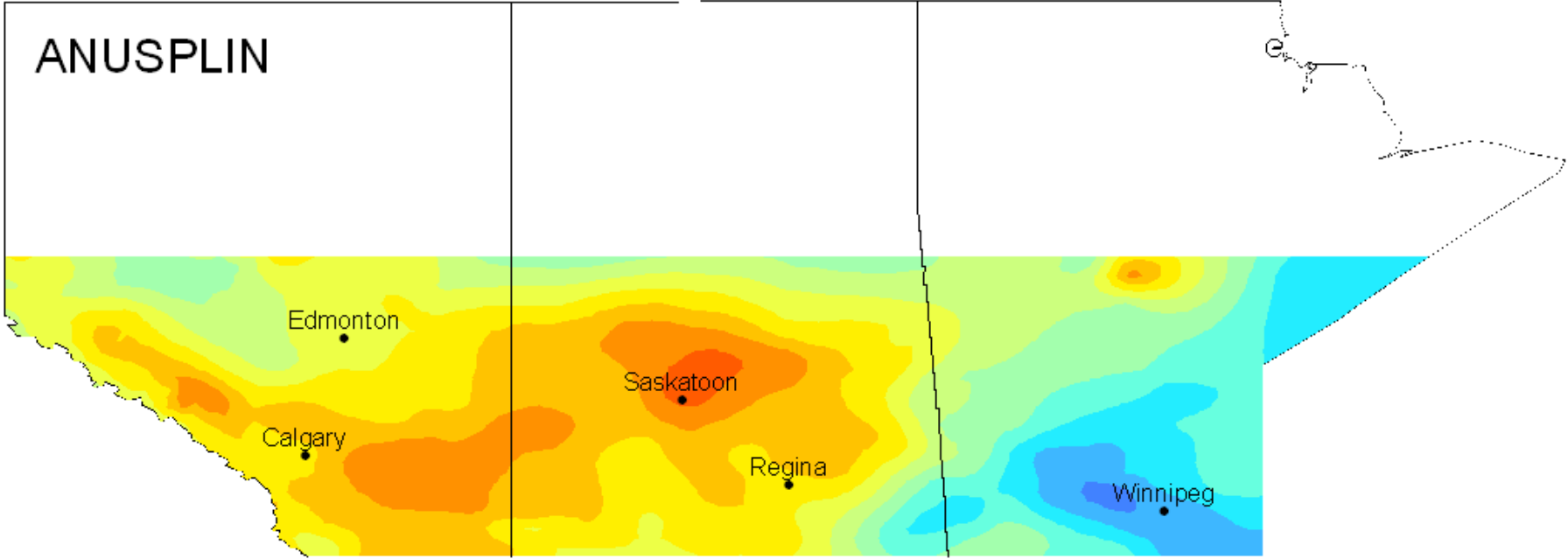
July 2000 12-month SPI



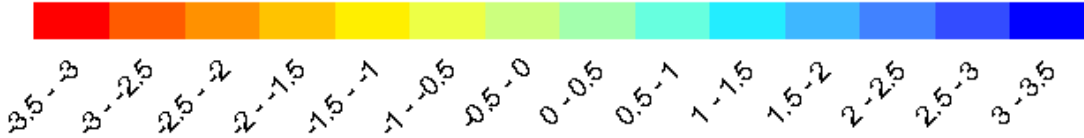
Standard Precipitation Index



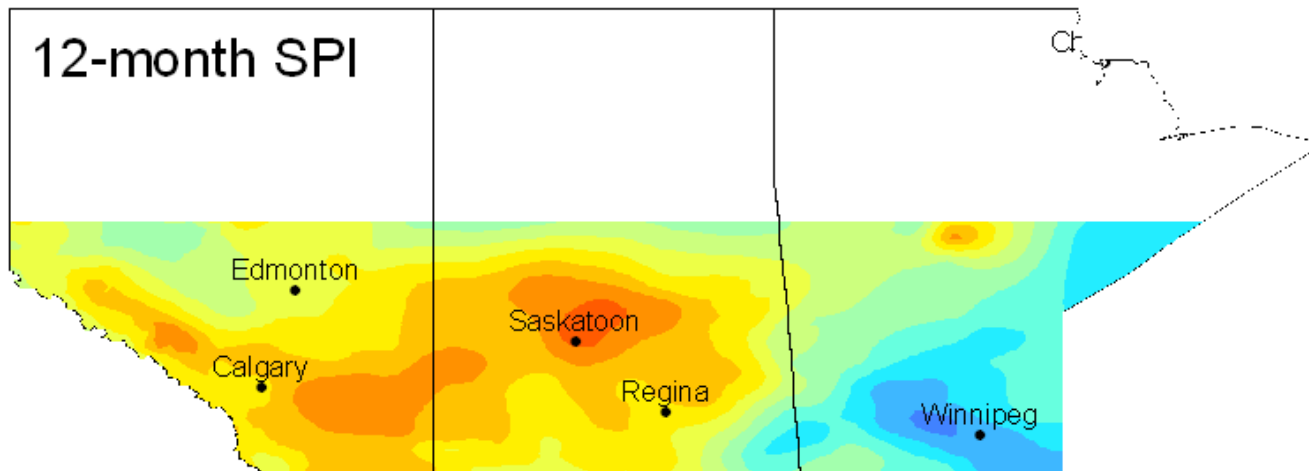
August 2001 12-month SPI



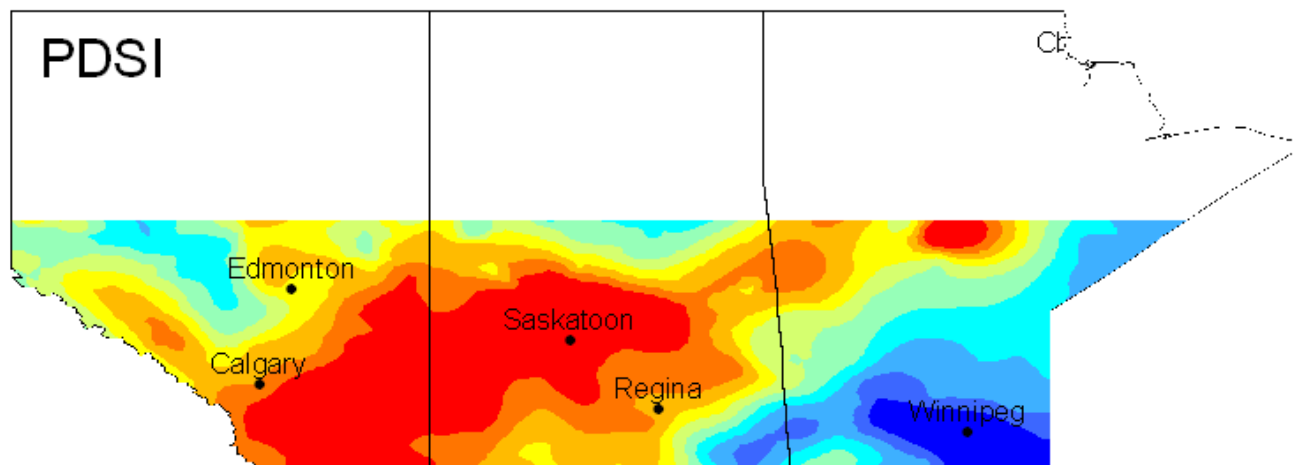
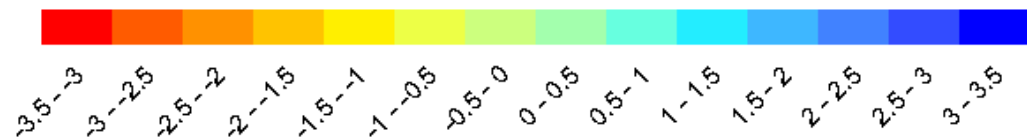
Standard Precipitation Index



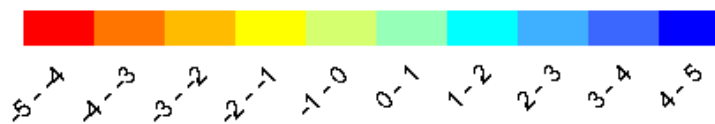
August 2001



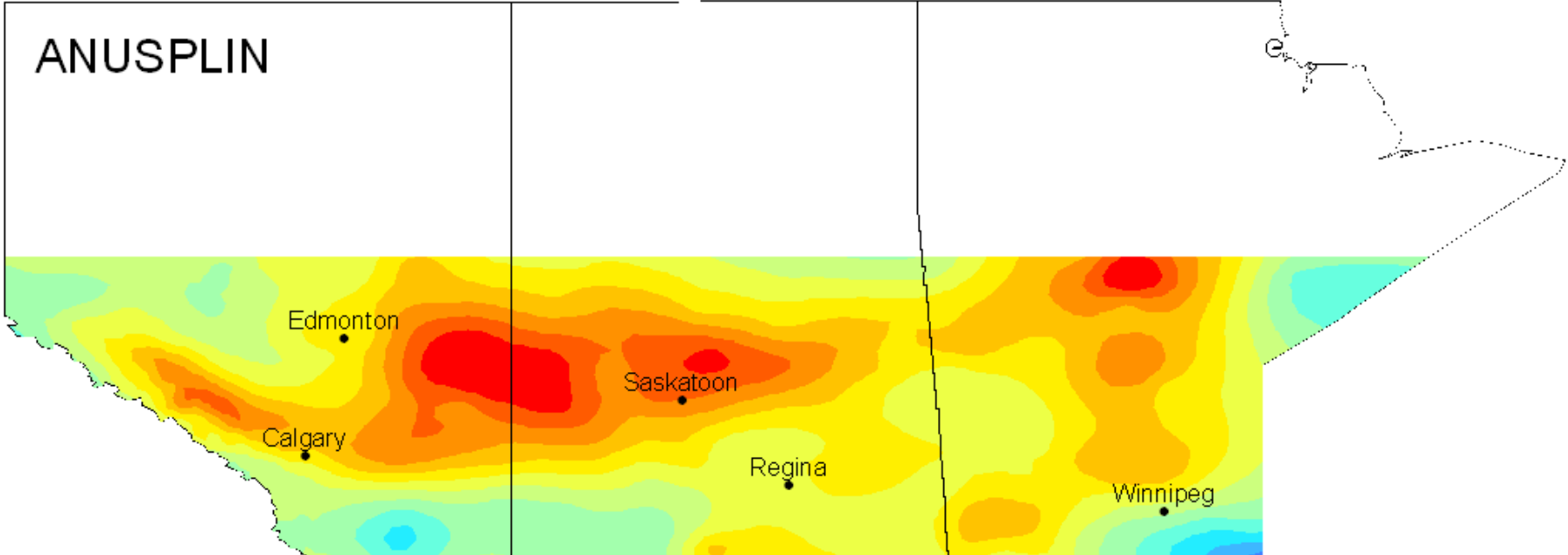
Standard Precipitation Index



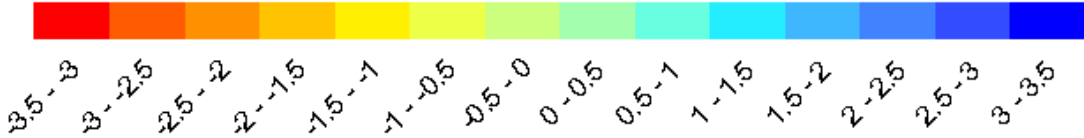
Palmer Drought Severity Index



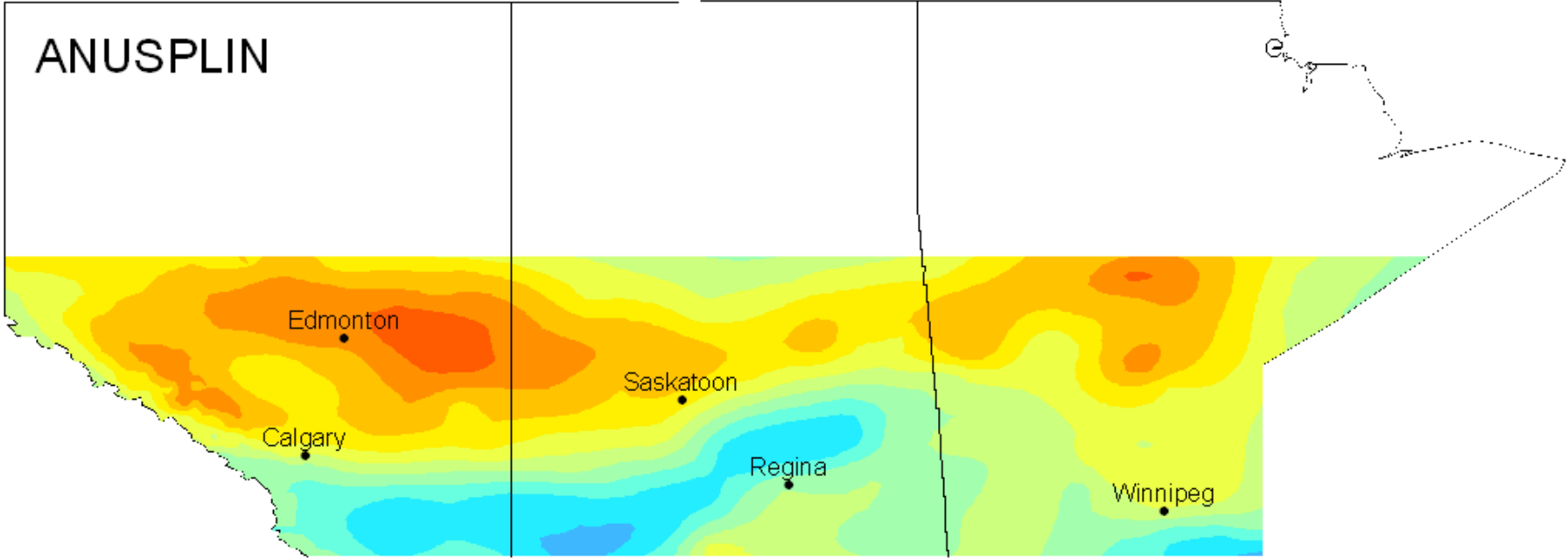
June 2002
12-month SPI



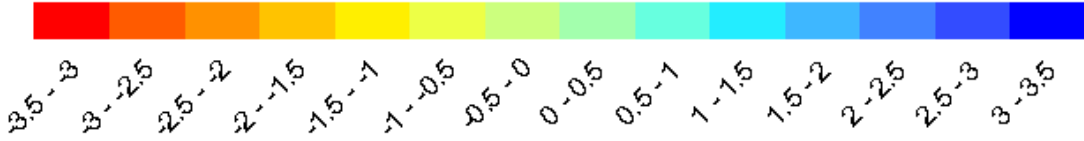
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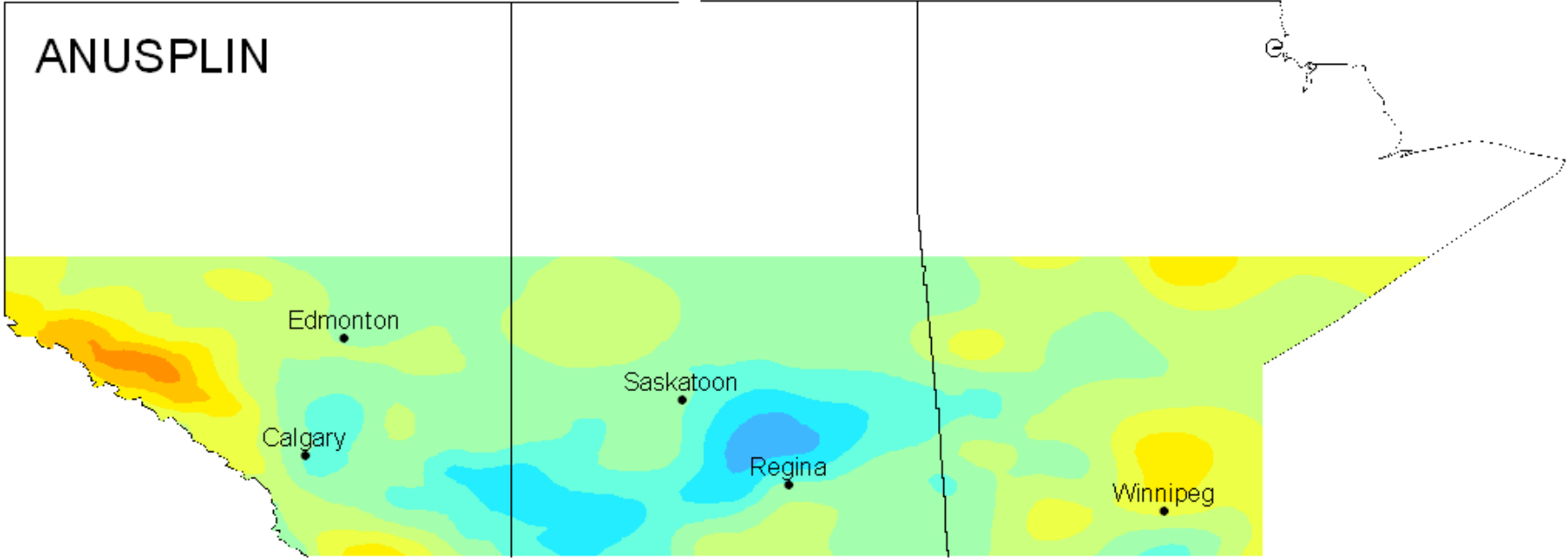
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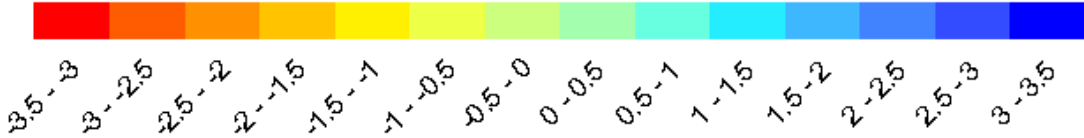
Standard Precipitation Index



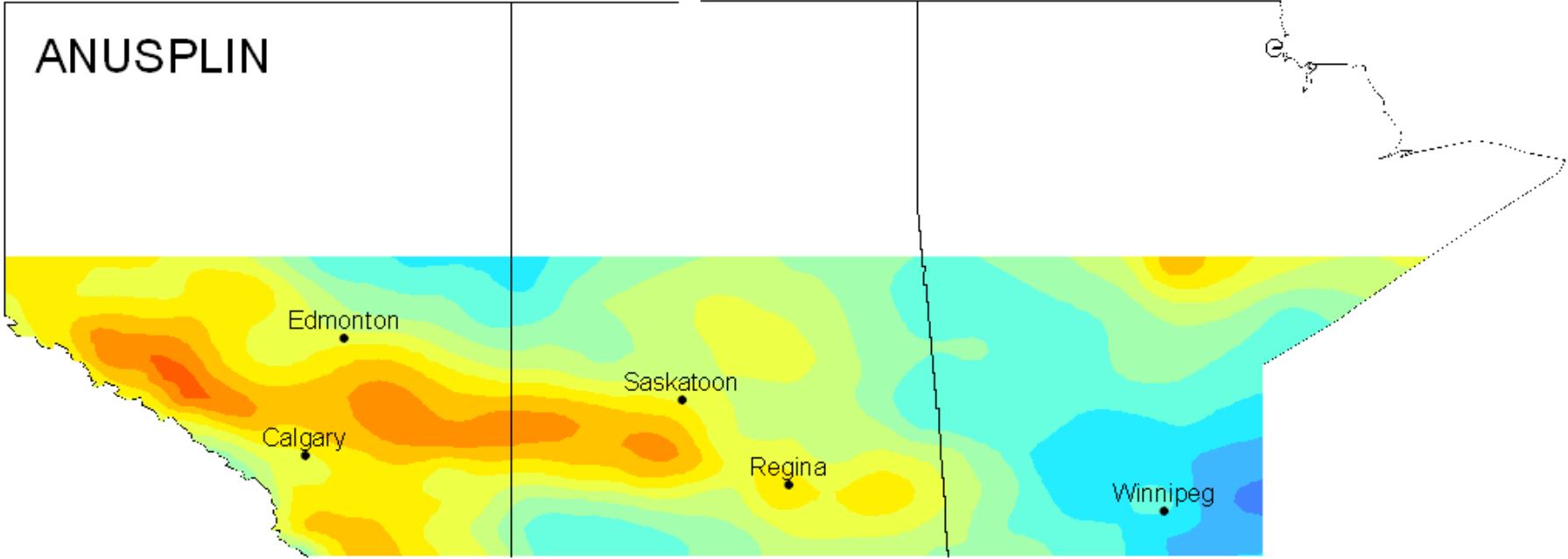
July 2003
12-month SPI



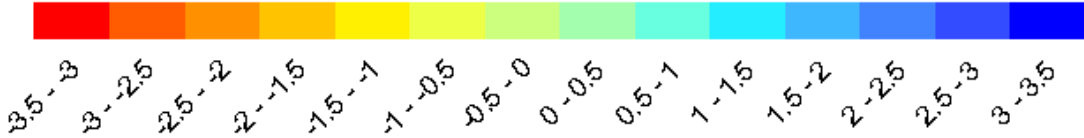
Standard Precipitation Index



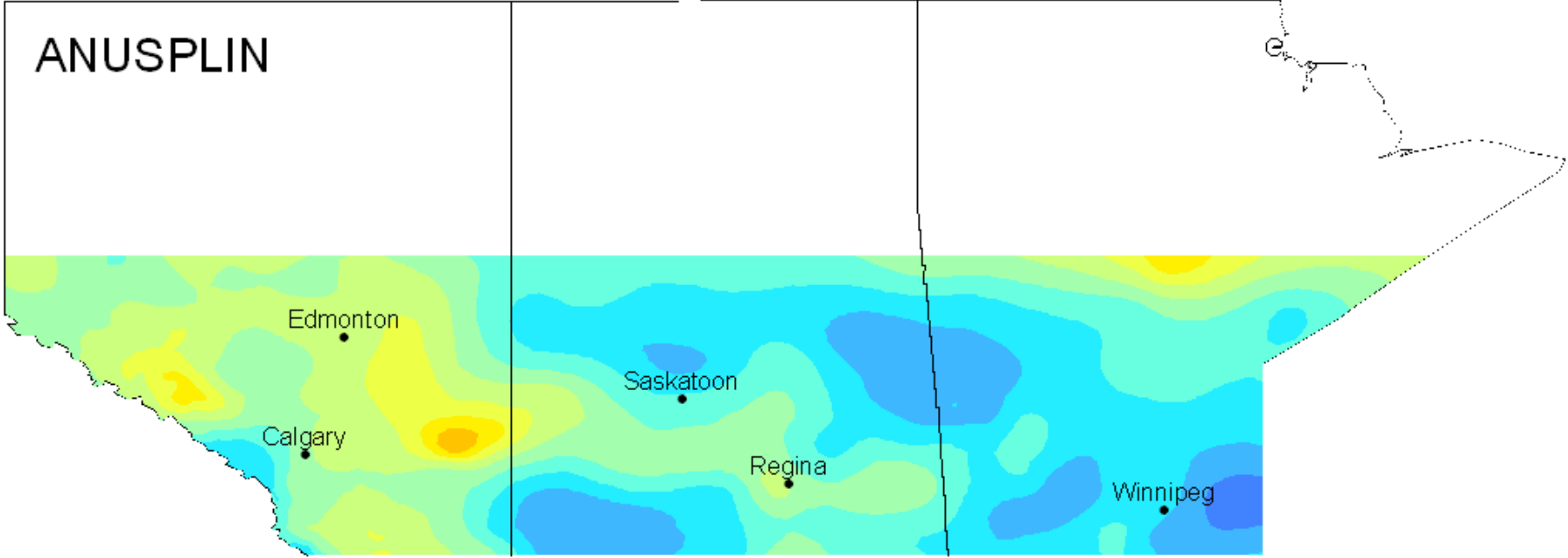
May 2004 12-month SPI



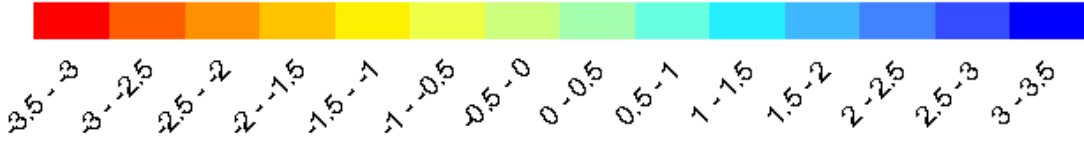
Standard Precipitation Index



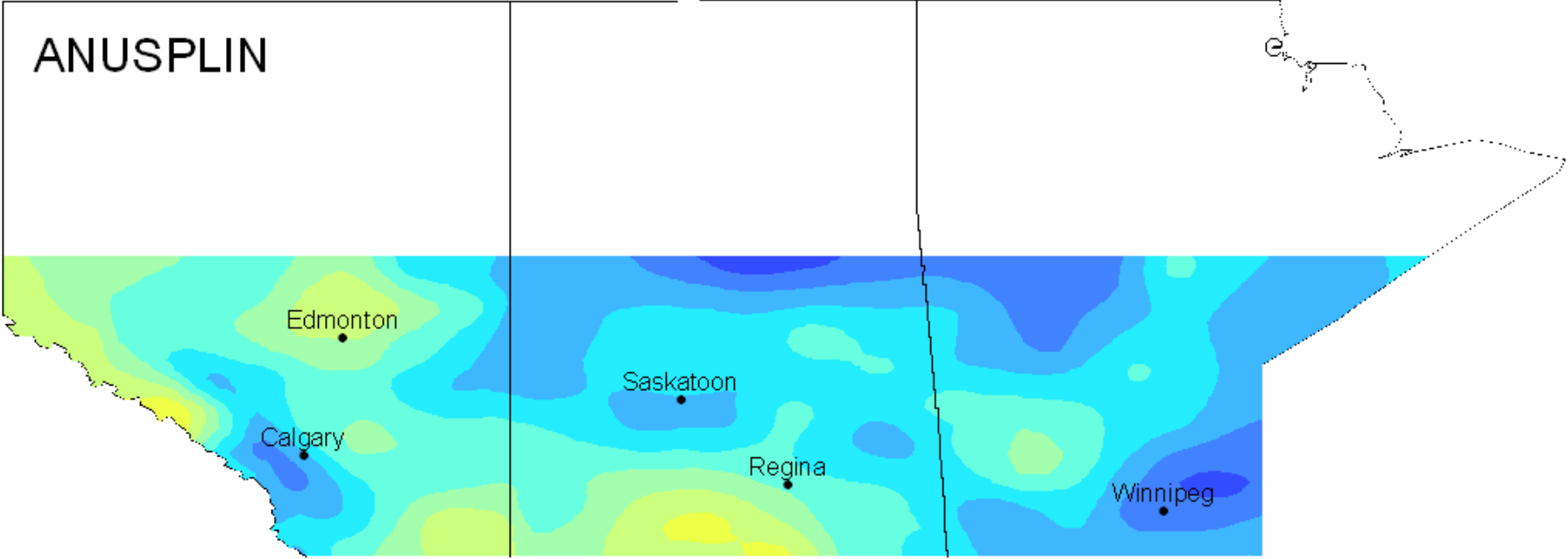
August 2004 12-month SPI



Standard Precipitation Index



August 2005 12-month SPI



Standard Precipitation Index

